

II. Objection To Specification

The Examiner stated that the title of the invention is not descriptive and required a new title that is clearly indicative of the invention and its novelty to which the claims are directed.

Accordingly, Applicants have amended the title to "Photoelectric Converter Having A Light Receiving Portion With An Improved Readout Gate" to reflect the novel readout gate between the light receiving portion (e.g., photodiode) and the vertical CCD portion of the photoelectric converter.

The Examiner also objected to the abstract of the disclosure because it fails to meet the requirement of a single paragraph in length.

Applicants have amended the abstract herein to be in conformance with the single paragraph requirement of MPEP § 608.01(b) and request that the Examiner remove the objections to the title and the abstract.

III. Objection To Claims

The Examiner objected to antecedent informalities in claims 2 and 2, asserting that the word "charger" must precede "transfer portion."

Applicants have amended the claims to remove the informalities and request the Examiner remove the objection to the claims.

IV. 35 U.S.C. ¶ 112(2) Indefiniteness Rejection of Claims

The Examiner rejected claims 1-5 under 35 U.S.C. ¶ 112(2) for indefiniteness, stating that the "gate width" (in claims 1-4) is defined in the specification to be a constant width while the "readout gate width" is described as changing.

Applicants have amended claims 1-4 to identify that the photoelectric converter include a gate portion, having a first side and a second side that both define a readout gate width as described in the Specification. Accordingly, Applicants request that the Examiner remove this rejection to the claims.

V. 35 U.S.C. § 102(b) Anticipation Rejection of Claims

The Examiner rejected claims 1-5 under 35 U.S.C. 102(b) as being anticipated by Stevens et al, U.S. Patent No. 5,514,886. Applicants respectfully traverse this rejection.

In general, the Examiner argues that Stevens anticipates Applicants' invention because Stevens discloses a photoelectric converter with a gate portion that has a readout gate width that is wider at the light receiving portion than at the charge transfer portion. Stevens, however, discloses and solves a different problem than Applicants invention.

Stevens discloses that conventional "charge-coupled devices" or "CCDs" have an image sensing area and a horizontal shift register for transferring charge from the sensing area to an output region. Stevens discloses that efforts to reduce driving clock voltages within the CCDs has prompted others to taper the width of the CCDs, resulting in undesirable wells and/or barriers in the last stage adjacent to the output region that can impede charge flow to the output region of the device. (Stevens Col. 1 lines 17-51). Stevens discloses an image sensor with an improved an output gate for a horizontal charge transfer register to solve the problem in the art with the last stage of the horizontal shift register. (Stevens Col. 1 line 55 - Col. 2 line 5; Col. 2 line 65 - Col. 3 line 32; Col. 4 lines 50-67; Figs. 1,2, and 6).

Applicants disclose that, as the size of unit cells of CCD imaging apparatus (i.e., photoelectric converter) decrease or become more compact, a problem arises with reading out

charges from a light receiving portion (e.g., photodiode) of a unit cell to a vertical CCD charge transfer portion of the imaging apparatus. (Application pg. 1 line 14 - pg. 2 line 21) To solve this read-out problem from a light receiving portion or photodiode, Applicants teach and claim a gate portion with a readout gate width for the CCD unit cell to improve the read out of a charge from a light receiving portion or photodiode into the vertical charge transfer register. (Application pg. 7 line 4 - pg. 9 line 13).

Thus, Stevens fails to disclose the problem and solution for an imaging apparatus or photoelectric converter as taught and claimed by Applicants. Accordingly, Applicants request the Examiner remove the rejection to the claims.

In addition, Applicants request that the Examiner consider newly added claims 6-10 that provide further limitations for the photoelectric converter of claim 1 that are not found in the cited prior art.

CONCLUSION

In view of the above amendments and remarks, Applicant submits that all claims are clearly allowable over the cited prior art, and respectfully requests early and favorable notification to that effect. If the Examiner believes that a conference would be of value in expediting the prosecution of this application, the Examiner is invited to telephone the undersigned counsel to arrange for such a conference.

Respectfully submitted,

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